Monitoring for the International Broadcasting Bureau

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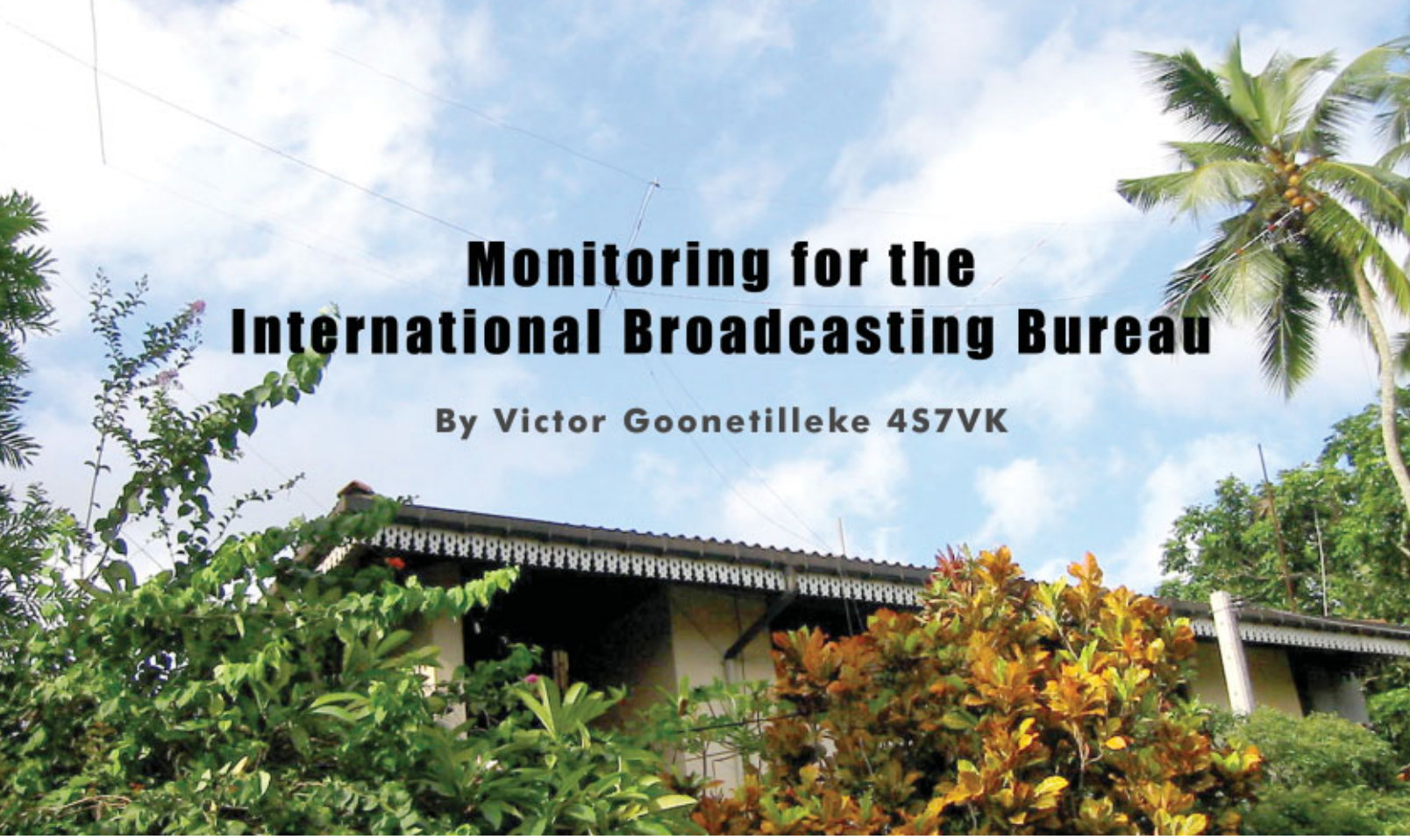

The author's low band Yagi antenna at his home in Sri Lanka.

With 60 Remote Monitoring Systems and 40 experienced human monitors located in five continents, the International Broadcasting Bureau's (IBB) Monitoring Service is a state of the art technical operation, blending the best in man and machine to achieve the highest standards possible in Technical Monitoring.

What is Technical Monitoring and what is its role today in International Broadcasting?

Technical Monitoring, to put it plainly, is keeping a constant ear on the technical quality of radio broadcasts to give the highest possible reception quality to listeners in the target areas of the broadcaster.

Do stations need reception reports in this age of remote monitoring systems scattered in many parts of the world? Aren't stations using state of the art systems to analyze their reception quality? Do broadcasters need listener reports anymore? It is obvious that many shortwave listeners and almost every DXer would wonder about these questions.

The IBB, like any major international broadcaster, spends large sums of money making programs. Gathering news and information, conducting interviews, writing scripts, editing, traveling, and finally getting the finished product to the studio control room cost a great deal of money and human effort. Above all, it is the task of the IBB to carry the message of the American people to all corners of the world. If the transmitted signal which carries the finished product doesn't reach the listener at a useful level, that effort would all be in vain. Therefore, it is evident that the IBB must deliver a satisfactory signal to people all over the world, be they Afghans high up in the Kyber, Iraqis demonstrating on the streets of Baghdad, or even the casual listener in the comfort of his bedroom with a portable radio. It is the constant evaluation of the technical quality of IBB's broadcasts that will enable it to succeed in that task.

Traditional Method of Collecting Reception Information.

Most stations depended on listeners to inform them about reception quality. However, sporadic letters from listeners were not sufficient on which to base their judgment. Therefore, some stations went to the extent of even printing special reception report forms so to enable listeners to fill them up easily over a period of some days or a month and send the reports to the stations. The SINPO code (Signal, Interference, Noise, Propagation, Overall-reception) was invented to facilitate this reporting system.

The major broadcasters even set up monitoring panels of selected listeners to report regularly. Listeners were sent gifts from time to time in appreciation of their assistance and some broadcasters even met out-of-pocket expenses. The broadcaster would take necessary measures to solve reception problems in the target areas, taking note of feedback from listeners and their monitoring panel. A few had reciprocal arrangements with other broadcasters to monitor each others' broadcasts. This worked well and still does for many broadcasters. However, for big international broadcasters, sporadic voluntary feedback from such monitoring is insufficient.

The author's monitoring post includes a Lowe HF225, Icom R71A, Icom R70, Sony ICF 2010, National Panasonic 3 band radio, and four HF transceivers.

The International Broadcasting Bureau

Today, without a doubt, the most important international broadcasting network is run by the International Broadcasting Bureau (IBB), which is the parent body of the Voice of America, Radio Free Europe and Radio Liberty, Radio Free Asia and Radio Marti. These stations use transmitting sites located all over the world to get the strongest possible signal and the clearest possible reception in its many target areas. Millions of dollars are spent to operate these transmitting stations.

The IBB also owns and operates many relay stations. In addition, it also hires airtime from other broadcasters. Ironically, some of the transmitters in the former Soviet Union and Eastern Europe which jammed the VOA and RFE/RL transmissions, now carry IBB programs to their people today.

The IBB's goal is to carry the voice of the United States to every corner of this world. The IBB thus needs a very efficient monitoring service to achieve this task.

IBB Monitoring System

The IBB runs a network of *Remote Monitoring Systems* in almost 60 locations, and this number is steadily growing. In addition, the IBB employs some of the finest human monitors in very important target areas. Together, the *RMS* and the *Technical Monitors* form a state of the art monitoring system unparalleled in the history of international broadcasting.

Remote Monitoring System (RMS)

The RMS consists of a communications receiver with a ground plane (nondirectional) antenna, connected to a computer. The computer, through specially designed software, is controlled and programmed from Washington and from designated Technical Monitoring Offices (TMO) to do many tasks. These include scanning a complete frequency range and recording frequency occupancy in a graphic format. This is an invaluable tool which helps to find unoccupied frequencies to replace frequencies that are interfered with, or to locate clear

A typical IBB remote monitoring system

frequencies for new transmissions. The RMS also sets the receiver to record a sampling of any program transmitted on any number of frequencies.

The system is so effective and fast that it is possible to tune in to more than a hundred different frequencies within a span of thirty minutes and record sound bytes in the computer. These are then transmitted to Washington via the Internet.

The data thus collected goes into a master server. These sound samples in turn can be listened to by frequency managers, program producers and even members of the public. The system – the brain child of IBB Monitoring Division Chief, Bill Whitacre – is such an incredible tool that many international broadcasters depend on it to manage their frequencies and check their reception.

The RMS revolutionized technical monitoring and frequency management. A detailed description of the IBB's Remote Monitoring system complete with sound samples can be accessed at **http://monitor.ibb.gov/rms/**

Technical Monitoring Offices (TMO)

With a worldwide network of RMSs and human monitors, it is important for the IBB to have regional Technical Monitoring Offices (TMOs). These are located in *Vienna, Helsinki, Hong Kong, New Delhi, Bahrain* and *Accra.* Technical Monitoring Offices carry out live monitoring of IBB broadcasts as well as running and maintaining the network of RMSs and coordinating monitoring with the IBB's human monitoring force.

Each TMO is responsible for a number of RMSs and monitors. With the advent of the Internet the old mail system became obsolete and has been replaced by connecting all technical monitoring locations, RMSs and TMOs via the Internet with Monitoring Headquarters in Washington DC.

The Super DXers/SWLs

Perhaps the most interesting part of the IBB's monitoring force for hobby radio enthusiasts (DXers) might well be the human monitors scattered all over the world. The IBB uses the services of around 40 monitors who tune in to every broadcast on every frequency that the IBB broadcasts almost 365 days of the year. What do these monitors do?

They are equipped with simple receivers that are considered to be typical of the region that they live in. Using simple antennas and, in some instances, only the built-in telescopic whip antenna, they record reception of IBB signals beamed to their area. Every reception observation is entered into a Newton or a Palm V handheld computer using specially designed applications. A technical monitor checks reception of every frequency of every broadcast specified by the TMO, at least once every 30 minutes.

This data is then sent via the internet to a central database known as Frequency Monitoring Data System (FMDS). The data is tabulated and is available per broadcaster frequency, time, language and location within a matter of hours of the data being transmitted from the monitoring locations in far flung outposts.

In addition to simple domestic receivers, professional communications receiving equipment and excellent antenna systems are also used by the Technical Monitors for specialized work. This may include frequency measurements, finding clear frequencies, and also identifying interference – be they other broadcasters or other man-made sources. The monitors occasionally carry out extensive manual "bandscans" from time to time to determine frequency occupancy.

The monitors also listen to the broadcasts to find any irregularities, such as modulation problems, transmitter breakdowns, spurious signals and anything which should not be happening to spoil the listening pleasure of the IBB audience. There are times that the wrong program could get on a frequency which should be carrying a different language. Suddenly a previously unjammed language service could get jammed or even the type of jamming might change.

Depending on the nature of the irregularity, the monitors immediately contact either the regional TMO office, the transmitting station

The author's high band log periodic antenna

or the Network Control Center (NCC) in Washington, to rectify the problem as fast as possible. Some problems can be solved in a matter of seconds while some knotty and intermittent problems can take many days to sort out.

The moment a problem is spotted, it is also reported to an E-mail network that connects the chain of monitors and TMOs, so that the entire network starts to work on it. Often monitors from outside the target area can be of invaluable help in identifying interference due to the overbearing strength of the IBB signal within the target.

Bottom line: The work of the monitor is to determine whether a broadcast is good enough for average reception. If not, then to do everything possible to make it satisfactory.

The monitors are also an invaluable source of information to the broadcaster due to their knowledge of the target areas, including listener habits and the regional culture of the different regions to which the IBB broadcasts. They are not tied to one location, but can move out from urban to remote areas to check on reception and can communicate with listeners to seek their opinions about reception. Therefore, these monitors are a flexible, intelligent human resource for the IBB. Some of them even conduct listener surveys and gather other feedback useful to program producers as well as to frequency managers.

Why Human Monitors in this Age of Automation?

This is a question that is often asked, not only by listeners but also at the higher echelons of the IBB. Do we need human ears when we could have automated systems to listen, record and send back data? In fact, there is an incredible amount of data that the RMS system records and sends back. It is possible for program producers and frequency management personnel from Washington to listen to the program quality in far distant targets of the world just minutes after the broadcast or even while it is still on the air. It doesn't require much stretch of the imagination to realize what a tremendous tool the RMS is.

Yet, all this data wouldn't make sense unless humans evaluate them. The simple fact is that all the data that is gathered, even if sorted and tabulated for easy dissemination, needs to be viewed by humans. A whole team of technical people to listen to the technical quality of the recordings and disseminate that information will be absolutely necessary so that programmers and frequency managers can use the information.

Often there are times when the data itself calls for human input from the target areas. The RMS still cannot identify on its own whether an interfering source is a broadcasting station, jammer or a problem of a technical nature. A bandscan can show spots not occupied, but *ideally*, real listening is needed to verify whether the free channel is really free and that another broadcaster is not occupying a channel adjacent though weak in strength to the same area. Sometimes, frequency registrations are not as accurate as the industry would like them to be. Radio stations change frequencies according to their needs. Some don't even inform their usage to the High Frequency Coordinating Committee (HFCC).

Bill Whitacre receives a plaque of appreciation from senior Technical Monitors in Asia Umesh Shenoy and the author. In the background (l to r) IBB Frequency Managers Dan Ferguson, Frank Dunn, Ed Wickenhofer, Steve Bracher.

Therefore, on the one hand we realize that a machine can go on and on as long as there isn't a breakdown. Given human limitations, one cannot expect a monitor to carry out tasks at all odd times of the day or night, with that same monotonous regularity that a machine can. Likewise, in locations that may be life threatening

Marina Gukasova, IBB monitor in Georgia

or financially not viable to have a human monitor, it is easy to have an RMS. There are areas very important to the IBB where it cannot find a suitable monitor technically competent or willing to do the task.

At the same time there are locations where the IBB would greatly value an RMS or a human monitor, but finds it impossible due to lack of proper technical support such as Internet connectivity, stable electricity and a non hostile location for a US facility to be located. Or, where freedom is too restricted to allow a monitor, such as in North Korea, to mention but one.

The simple truth that has surfaced from "on the job experience" is that there are tasks that a machine can do better than a human. There are also tasks that a human can do which a machine cannot. There are also tasks that both machines and humans can do, but one can do better.

Therefore, the basis of the best system is to get a machine to do what it can do best and a human to do what he can do best, so that together they may do the job better than ever before.

Alok Dasgupta, Calcutta Monitor

This fusion has eliminated the need to have hundreds of humans to do the task. A small core team in Washington with monitors out in the field has been the formula for success – in short, a blending of the best in technology and human resources. This fusion of man and machine was the vision of Bill Whitacre, Chief of IBB Monitoring. It has been so successful, a state of the art operation, that today even the BBC and many other broadcasters solicit the services of IBB Remote Monitoring System and its network of human monitors to keep their frequency management and reception levels at the competitive levels needed by discriminating listeners all over the world. A visit to any RMS site on the Internet will show the amazing number of International Broadcasters who seek this service from the IBB.

Who Are IBB's Human Ears?

The IBB's monitors come from all walks of life and from all over the world – reflecting IBB's global nature. These monitors could be termed super DXers, if you like to put them in that class. Most are top DXers and Amateur Radio Operators. Take TMO Helsinki, headed by Arto Mujunen, well known in European DX circles for his many years in the hobby and services to the European DX Council, and top medium wave DXer Mauno Ritola, and Ham operator Timo Toru.

Anurag Parashar at the Technical Monitoring Office (TMO) in Delhi

Then there is Bogdan from Poland, who amazes everyone in the team by being able not only to identify any language and broadcaster, but often the name of the announcer of East European broadcasts – such is his dedication and expertise. In Oceana there is Craig Tyson, who needs no introduction – one of the best DXers in Australia, contributor to *Passport* and *WRTH* for many years. In Japan, the IBB's man is top DXer and computer wiz-kid Sonny Ashomori. In South Asia, Alok Das Gupta and Victor Goonetille, along with some of the better known DXers in the region, have been IBB monitors for decades.

Alexander Beryozkin, UA1AEB, monitors in Russia

Charles Danyer has been VOA's man in Central America for a long, long time. Vladimir Titarev and Alexander Beryozkin are well-known names in DX magazines. The Hong Kong Bureau, Vienna, Bahrain and New Delhi are manned by a collection of amateur radio operators and computer experts, and all of them are as good as any DXer you could find. Accra, Ghana and Bahrain perform invaluable monitoring in Africa and in the volatile Middle East.

IBB Monitor Feodor Brazhnikov from Irkusk

The IBB also has a fine network of monitors in the former Soviet Union, stretching from Vladivostok to Leningrad, Estonia, Latvia and Lithuania in the Baltic to Georgia and Uzbekistan in Central Asia.

These are only a few of IBB's men and women. Each one of these monitors is a very experienced professional radio person, either a technically competent DXer, radio amateur and/or computer expert. They all share one thing in common, and that is a love for their work.

Unlike before the advent of the Internet, all these monitors are interlinked through many internal e-mail lists and form a very close knit family. Every day, Monitoring Chief Bill Whitacre communicates with the monitoring team, coordinating operations and sending information of use to the monitors. These include the latest changes to IBB's frequencies, requests for monitoring from broadcasters, schedules of other broadcasters, information snippets from DX bulletins, newspapers and the Internet.

For their part, TMOs and Technical Monitors keep a stream of information flowing that is of use to other monitors – even DX tips! It is, however, no DX club or weekend radio extravaganza. For the many monitors in the IBB team, it is a virtual home of a family of radio experts from five continents, who have a job to do and believe in doing it better than anyone else. It is a way of life that they (we) are proud of, and a service that is invaluable for the International Broadcasting Bureau.